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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/845,434	04/30/2001	Yao-Min Lin	U 013435-4	2525

7590 08/24/2004
LADAS & PARRY
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EXAMINER

HANNETT, JAMES M

ART UNIT	PAPER NUMBER
2612	2

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/845,434

Applicant(s)

LIN, YAO-MIN

Examiner

James M Hannett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6 is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1: Claims 1, and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,786,964 Plummer et al in view of USPN 5,155,585 Ishikawa.

2: As for Claim 1, Plummer et al teaches on Column 5, Lines 67-68 and Column 6, Lines 1-25 an apparatus comprising: an optical lens assembly (12); a wedge lens turntable (26) embedded with a plurality of wedge lenses (28A and 28B) for projecting images passing through the optical lens assembly;; and an image detector (18) for capturing the projected image passing through the wedge lens turntable. Plummer et al teaches that the filter wheel rotates, however, does not teach that a step motor can be used to rotate³ the filter wheel.

Ishikawa depicts in Figure 1 and teaches on Column 6, Lines 3-15 that it is advantageous to use a step motor (17) connected in the center of a filter wheel (13) by a shaft (13C) in order to better rotate and position a filter wheel.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the step motor connected in the center of a filter wheel by a shaft as taught by Ishikawa in order to rotate the filter wheel in Plummer et al in order to better rotate and position a filter wheel.

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3: As for Claim 3, Plummer et al teaches in Figures (2 and 3) the wedge lenses (28A and 28B) and a through hole (30A and 30B) are placed along the circumference of the wedge lens turntable (26).

4: In regards to Claim 4, Ishikawa depicts in Figure 1 and teaches on Column 6, Lines 3-15 that it is advantageous to use a step motor (17) connected in the center of a filter wheel (13) by a shaft (13C) in order to better rotate and position a filter wheel

5: As for Claim 5, Plummer et al teaches on Column 5, Lines 67-68 and Column 6, Lines 1-25 that the image detector (18) is a CCD.

6: Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,786,964 Plummer et al in view of USPN 5,155,585 Ishikawa in view of USPN 4,633,317 Uwira et al.

7: In regards to Claim 2, Plummer et al in view of Ishikawa teaches the claimed invention as discussed in Claim 1. However, Plummer et al teaches the use of shifting the image only to the right and to the left by means of two optical wedges (28A and 28B). However, Plummer further teaches on Column 7, lines 25-35 that more optical wedges can be used and is not limited to two.

Uwira et al teaches on Column 2, lines 25-65 and depicts in Figures (1 and 9) that it is advantageous when designing an imaging system that shifts the image in order to increase resolution to shift the image to four different directions of up, down, left, and right. Uwira et al teaches that this method is advantageous because it improves image resolution by a factor of four.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use four optical wedges to shift the image of Plummer et

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al to four different directions of up, down, left, and right. As taught by Uwara et al in the invention of Plummer et al in order to improve image resolution by a factor of four.

Allowable Subject Matter

8: Claim 6 is allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach the use of a method for enhancing image resolution by using an image sensor to capture five images that are shifted upwards, downward, rightward, leftward and no shift. The prior art does not teach that pixel numbers are computed by subtracting the image with no shift from the images obtained when the image is shifted upwards, downward, rightward and leftward, and determining a position of defective pixels according to the above computation.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPN 4,967,264 Parulski et al see Figure 1; USPN 5,282,043 Cochard et al teaches the use of a video camera with a method for improving resolution of the image sensor by shifting the image; USPN 5,400,070 Johnson et al see Figure 1; USPN 6,256,066 Yukawa et al teaches the use of a video camera with a method for improving resolution of the image sensor by shifting the image; USPN 6,686,956 Prakash et al teaches the use of a video camera with a method for improving resolution of the image sensor by shifting the image; USPN 5,561,460 Katoh et al teaches the use of a video camera with a method for improving resolution of the image sensor by shifting the image; USPN 5,877,806 Kawano teaches the use of a video camera with a method for improving resolution of the image sensor by shifting the image.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M Hannett whose telephone number is 703-305-7880. The examiner can normally be reached on 8:00 am to 5:00 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 703-305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James M. Hannett
Examiner
Art Unit 2612

JMH
August 10, 2004


TUAN HO
PRIMARY EXAMINER